Ohio Agricultural Experiment Station

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THE SPRING CANKER WORM.

Paleacrita vernata.

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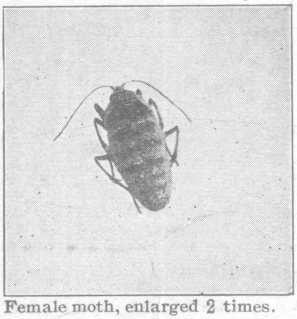
For several springs this insect has been notably injurious in Ohio orchards and forests. It is an old offender and while well known for the amount of damage it inflicts, not all orchardists know how easily and cheaply it can be controlled. The insect is probably present in small or large numbers in every locality in Ohio.

DESCRIPTION AND HABITS.

The female moth is wingless and somewhat spider-like in appearance. Her body is hairy in appearance and of a pale grey color. The head is dark and along the sides of the body beneath is a row of dark spots. Sometimes a square black spot is found on the hinder part of the thorax and a dark stripe extends along the back. The legs are spotted and ringed with black.



Female moth, enlarged 2 times.

Sometimes as early as February, if the season is warm, these curious creatures issue from the ground and ascend the trunks of the various orchard and forest trees. The bulk of the females usually appear in March and April.

The male moth, which is among the earliest moths seen on the wing in springtime, is pale ash-grey in color, the fore wings having a somewhat silky luster and being crossed by four narrow bands, three of them brown and one white.

The males appear slightly earlier than the females. Pairing occurs while the latter are ascending the trees.

The eggs are said to be deposited in rather irregular masses in bark crevices and in cracks on the body of the tree. Apple is the preferred food plant, but nearly all the common orchard trees and many shade and forest trees, such as elm, maple and oak, suffer more or less severely. Upon hatching, the young worms, which belong to the class known as "loopers" or measuring worms, make their way to the tender foliage and commence feeding on the same. After a short time, if the worms are numerous, the trees appear as if severely frosted or as if scorched by fire. A critical examination shows that the pulpy tissue of the leaf has been eaten away, leaving

only the midrib and a network of veins. When first hatched, the caterpillars are so minute they may escape observation unless very carefully looked for. If the limb is jarred the caterpillars drop to the ground, or at least part of the way, the descent being made by means of a silken thread spun from glands in the mouth. If unmolested after the jarring, the thread serves as a ladder, upon which the worms ascend to their old pasture.

When full grown, the caterpillar is about an inch in length and varies in color from greenish-yellow to dusky or even dark brown. The body is lined longitudinally with narrow pale stripes, their color increasing in intensity toward the middle of the sides of the body. One brood of caterpillars appears annually. The winter is passed under ground in the pupa or chrysalis stage.

Natural enemies, such as birds and parasites, attack all stages of the insect, but cannot be relied on to control it some seasons, hence we must often resort to artificial remedies.

REMEDIES.

SPRAYING.

Orchards which are regularly sprayed for fungous disease and codling moth are seldom troubled much by canker warms. If they are at all numerous, the trees should be sprayed before blooming with Bordeaux mixture to which Paris green or arsenate of lead has been added. This spraying is usually made with Bordeaux mixture in the regular course of orchard work to prevent scab and leafspot; the addition of poison to the spray will help to control the canker worm, the case-bearers and many other leaf-eating insects. The poison should be used freely since the canker worm is harder to kill than most caterpillars. One-half pound of Paris green to 50 gallons of spray will be about right. The next spraying, which is applied as soon as the petals have fallen, will catch not only the codling moth and curculio, but the canker worm as well. A third spraying, made about 10 days after the petals have fallen, will quite effectually finish the worms. If the caterpilars are numerous, these later sprayings should be made more poisonous than the first one, because grown canker worms require a strong dose of poison.

It is seen that, to control this insect in apple orchards, the only modification of the sprayings customarily made against other troubles is to add poison to the application that is given before blooming, and to slightly increase the usual allowance of poison in the two treatments made for codling moth immediately following the blooming period.

BANDING.

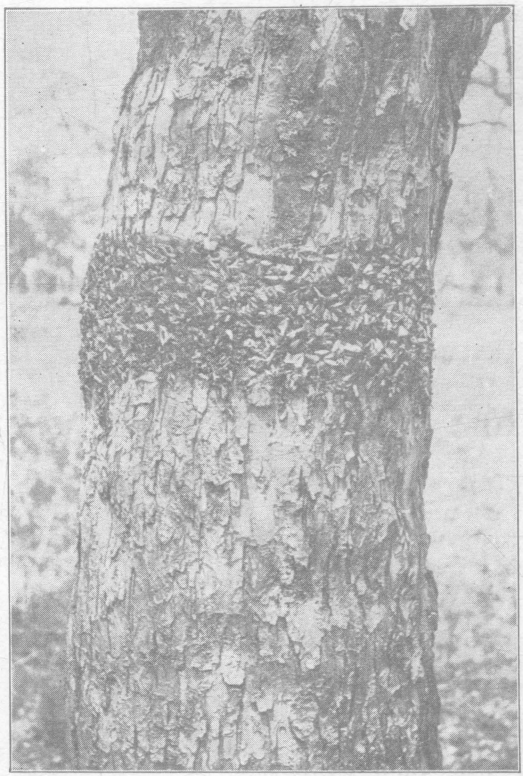
Orchards which are never sprayed sometimes become over-run with these worms. The foliage is stripped from the trees almost as soon as it appears, and the trees are unable to secure a normal amount of foliage until about the first of July. This defoliation may occur for several years in succession and prevent not only the possibility of fruit-crops, but may eventually kill the trees, directly

Cotton band tied in place before folding over.

Cotton band folded over the string in final position.

or indirectly. For such an orchard and for varieties of fruit trees and forest trees, susceptible to attack, and not usually sprayed at the periods when spraying is most effective against the caterpillars, banding the trees to prevent the ascent of the female moths is the cheapest and most effective remedy. One of the earliest forms of collar used for this purpose was made by tying a piece of rope about the trunk and inserting between the rope and the bark strips of tin which were bent downwardly and outwardly, thus making a

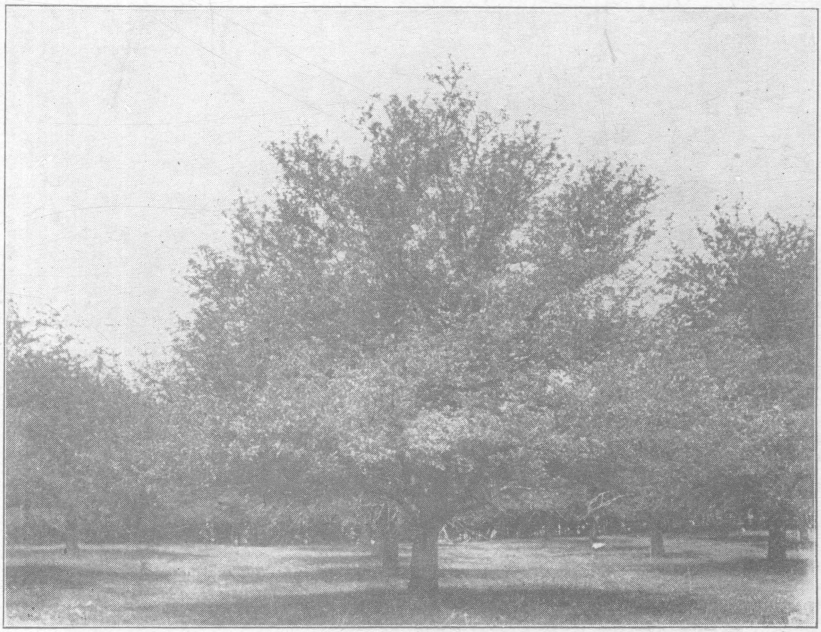
collar with a downward flare. Any open spaces between the bark and the collar were closed by crowding bits of cotton into them, thus preventing the females from slipping through the gaps. Another form of band is a strip of cotton batting about four inches wide and long enough to go around the tree. When placed in position it is tightly tied with a piece of strong cord around its lower border, after which the top is turned down over the cord, thus mak-



Band of Tanglefoot filled with moths.

ing an open-mouthed pocket between the bark and the cotton, the mouth directed downward. So long as the cotton remains fluffy this device is said to be quite effective. Again, bands of burlap are sometimes put in place in the same manner as the cotton bands, an application of gas tar or printers ink being given to the cloth before it is turned over to make the pocket. The pocket in this form of band should not be very deep and a broad band of the tarred cloth should be exposed.

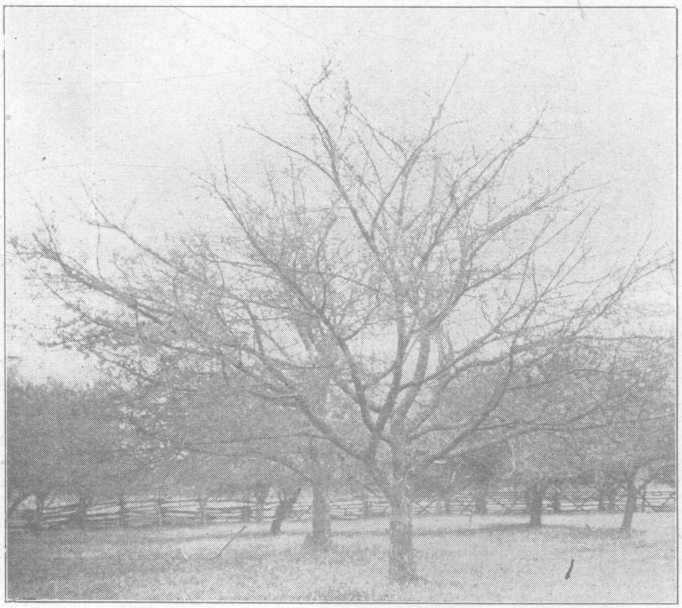
Some proprietary remedies have recently come into favor for banding purposes. For the past two years the Station has carried on tests with two of these remedies, Bowker's Bodlime and Thum's Tree-Tanglefoot. Since the former is no longer manufactured it may be dismissed with the statement that it did excellent work, though hardly so good as the Tanglefoot. The latter is made by the O. & W. Thum Co., Grand Rapids, Mich. It retains its sticky qualities for several weeks, even when exposed to all kinds of weather, and seems to cause no injury to bark or trees.



Scene in banded section of the orchard.

We performed our experiment in an old, neglected orchard of about 7 acres, with not more trees in it than would have covered 4 acres with the vacant spaces filled. We will, therefore, speak of the area as having been 4 acres. Canker worms had so overrun the orchard for several years previous to our experiment that its fruitfulness had long before ceased. The only trees upon the farm that produced a fair crop of medium quality fruit were two or three near the house that were frequented by English sparrows. We banded 2½ acres of the orchard, using about equal quantities of Bodlime and Tanglefoot. The other 1½ acres was left for check.

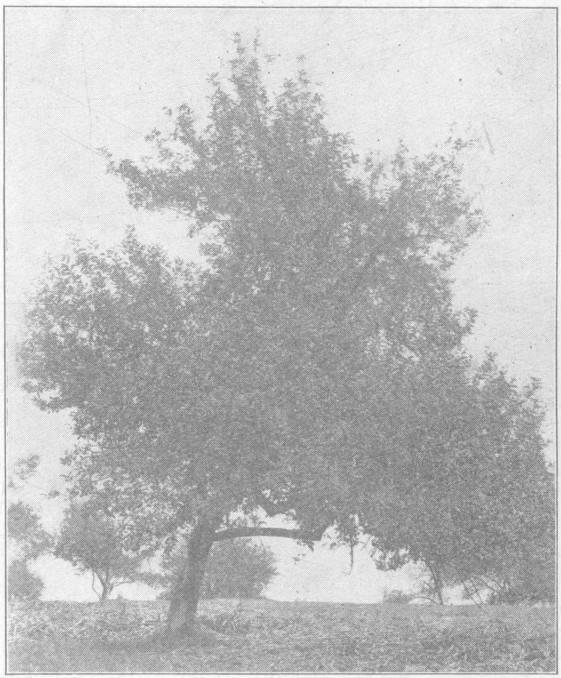
These bands were about 3 inches wide and the catch of moths was so great that in a few days the bands were so filled with both females and males that a bridge was made by their bodies over the sticky band, thus permitting many females to ascend the trees and lay their eggs. We then sprayed part of the banded area with Disparene and the remainder with Paris green, both insecticides being combined with Bordeaux mixture. Two applications were given, one just before the blossoms opened and the second just after they fell. But little damage occurred in this treated section and a small crop of good apples was harvested from it. The untreated section was almost completely defoliated and produced practically nothing.



Scene in unbanded section of orchard.

The past spring we again banded the same section of the orchard that was treated the previous year, but this time we put a second band above the first, so as to insuer the capture of any females that might succeed in passing the lower band. The effect of the preceding year's work was evidenced by the fact that fewer moths were captured than a year earlier, though they were still abundant. Only a small number of moths was caught in the second band and no spraying was necessary. The owner of the orchard, this season, banded, at a date too late, a portion of the 1½ acres that was untreated by us. At a short distance from this orchard he possessed a second orchard of 12 acres, perhaps equivalent to 8

acres, if the vacant spaces were filled. This second orchard was untouched during both seasons and, therefore, furnished a perfect check, since the trees in the two orchards were of about the same size and ought to have borne several bushels of apples per tree under favorable circumstances. The owner estimates that the section of 2½ acres, which was banded for two years, yielded, the past season, about 500 bushels of apples of good quality. The 1½ acres which was banded late last spring and was untreated the year before, yielded about 50 bushels of inferior apples, and the check orchard of 8 acres or more yielded about 25 bushels of poor fruit.



A tree that was banded.

In the spring of 1905 we sprayed part of the unbanded or check section with Disparene and another part with Paris green. The results were far inferior to those obtained in the banded section. We conclude that, while ordinary spraying will control the canker worm after it is once subdued, banding will prove far more expeditious in cleaning up an orchard that is badly infested. Also being the cheaper method, it is best adapted to protecting shade trees, which are often too large to spray. The cost of banding a tree is but a few cents. *Be sure to put the bands in place about the first of March, or earlier if the season is early.*

Our thanks are due to Mr. J. D. Rodgers, Bloomingburg, Ohio, for having had the opportunity to make this test in his orchards.

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